Fuzzy neural networks and cognitive modeling

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Abstract
Over the last two decades or so, several significant advances have been made in two distinct fields: neural networks and fuzzy systems. The theory of fuzzy systems provides a mathematical framework for capturing the uncertainties associated with human cognitive processes, such as thinking and reasoning, and for emulating corresponding perceptual and control processes. The paradigms of neural networks offer the complementary attributes of learning and adaptation, together with the innate efficiency of parallel operation. In this paper we explore fuzzy neural networks, the product of fusion of neural networks and fuzzy mathematics, which have potential for combining these mathematical tools into a single capsule. For their favorable properties, the fuzzy neural networks could be used in the development of systems with some sort of cognitive abilities. These cognitive systems would have the potential to recapitulate certain aspects of human cognition such as perception, memory, learning, and decision making.

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